

CLAIMS

1. A desiccant cartridge for insertion into a receiver of an integrated condenser/receiver, said desiccant cartridge comprising:
  - a porous desiccant bag defining sealed first and second end portions, said second end portion having a flat seal; and
  - a rigid member having a web portion and a skirt portion closed at one end by said web portion to form a cavity, and a tab portion extending transversely from said web portion, said flat seal being secured to said tab portion.
2. The desiccant cartridge as recited in claim 1 wherein the skirt portion defines an exterior surface, and said skirt portion has at least one hole extending from said exterior surface to said cavity.
3. The desiccant cartridge as recited in claim 1 wherein:
  - said rigid member includes a relatively thin, elongated stand-off portion extending from said web portion.
4. The desiccant cartridge as recited in claim 1 wherein:
  - said rigid member includes a relatively thin, elongated stand-off portion extending from said web portion, said stand-off portion defining a free end spaced from said web portion; and a flange portion positioned along said stand-off portion intermediate said web portion and said free end; and
  - said web portion and said flange portion are of substantially the same size and shape.
5. The desiccant cartridge as recited in claim 1 wherein:
  - said rigid member includes a relatively thin, elongated stand-off portion extending from said web portion, said stand-off portion having a boss and an eye through said boss.

6. The desiccant cartridge as recited in claim 1 wherein:  
said porous desiccant bag is secured to said tab portion by means selected from the group consisting of ultrasonic welding, thermal welding and vibration welding.
7. The desiccant cartridge as recited in claim 1 wherein said porous desiccant bag contains a fluorescent dye wafer.
8. The desiccant cartridge as recited in claim 1, wherein the integral condenser/receiver includes a rigid end closure, said rigid end closure including a plug portion for closing an open end of said reservoir and an elongated stand-off portion extending from said plug portion for abutment against said web portion of said rigid member to position said desiccant cartridge in said reservoir, said plug portion and said open end of said reservoir present complementary threads for securing said plug portion in said open end.
9. A desiccant cartridge for insertion into a reservoir of an integrated condenser/receiver, said desiccant cartridge comprising:  
a porous desiccant bag defining sealed first and second end portions, said second end portion having a flat seal; and  
a rigid dangle having a skirt portion defining an exterior surface, a web portion closing said skirt portion to define a cavity and a tab portion extending transversely from said web portion, said flat seal being secured to said tab portion, said skirt portion has at least one hole extending from said exterior surface to said cavity.
10. The desiccant cartridge as recited in claim 19 wherein:  
said rigid dangle is an integral plastic casting; and  
said porous desiccant bag is secured to said tab portion by means selected from the group consisting of ultrasonic welding, thermal welding and vibration welding.

11. The desiccant cartridge as recited in claim 9 wherein:  
said rigid dongle is an integral plastic casting; and  
said porous desiccant bag is secured to said tab portion by ultrasonic welding.
12. A method for charging a desiccant material into a receiver of an integrated receiver/condenser comprising the steps of:  
a) casting a rigid plastic member having a web portion and a tab portion extending transversely from said web portion;  
b) affixing a flat end seal of a porous desiccant bag to said tab portion to form a desiccant cartridge by means selected from the group consisting of ultrasonic welding, thermal welding and vibration welding; and  
c) inserting said desiccant cartridge through an open end of said receiver into a reservoir of said receiver.
13. The method as recited in claim 12 wherein:  
said step a) includes casting said rigid plastic member such that said rigid plastic member is an elongated stand-off member extending from the web portion, the stand-off member including a skirt portion closed at one end by said web portion to form a cavity.
14. The method as recited in claim 12 wherein:  
said step a) includes casting said rigid plastic member such that said rigid plastic member includes a skirt portion defining an exterior surface, said skirt portion being closed at one end by said web portion to form a cavity; and said skirt portion has at least one hole extending from said exterior surface to said cavity.
15. The method as recited in claim 12 including the additional step of:  
d) engaging a rigid end closure in said open end of said receiver, said rigid end closure including a plug portion for closing said open end and an

elongated stand-off portion extending from said plug portion for abutment against said web portion of said rigid member to position said desiccant cartridge in said reservoir.

16. The method as recited in claim 12 wherein:

said step a) includes casting said rigid plastic member such that said rigid plastic member includes a relatively thin, elongated stand-off portion extending from said web portion, said stand-off portion defining a free end spaced from said web portion; and a flange portion positioned along said stand-off portion intermediate said web portion and said free end, said web portion and said flange portion are of substantially the same size and shape as a cross-section of said reservoir so as to promote positioning, and inhibit lateral movement, of said desiccant cartridge in said reservoir.

17. The method as recited in claim 12 wherein:

said step a) includes casting said rigid plastic member such that said rigid plastic member includes a relatively thin, elongated stand-off portion extending from said web portion, said stand-off portion having a boss and an eye through said boss.

18. A desiccant cartridge for installation in a receiver of an integrated condenser/receiver, said desiccant cartridge comprising:

a rigid stand-off member having an inner pad portion, an elongated stand-off portion terminating in said inner pad portion, and an outer pad portion spaced from said inner pad portion; and

a porous desiccant bag positioned between said inner and outer pad portions, said porous desiccant bag being affixed to at least one of said inner and outer pad portions.

19. The desiccant cartridge as recited in claim 18 including an eccentric spacing rib portion spacing said inner and outer pads.

20. The desiccant cartridge as recited in claim 18 wherein:  
said rigid stand-off member includes an eccentric spacing rib portion and a clamp portion supported by said spacing rib portion between said inner pad portion and said outer pad portion; and  
said porous desiccant bag being secured by said clamp portion in a position between said inner and outer pad portions.
21. The desiccant cartridge as recited in claim 18 wherein:  
said rigid stand-off member includes an eccentric spacing rib portion and a clamp portion supported by said spacing rib portion between said inner pad portion and said outer pad portion;  
said clamp portion including a first clamping jaw supported by said spacing rib portion and a second clamping jaw supported by said first clamping jaw through a living hinge;  
said first and second clamping jaws defining complementary detents for engagement to secure said clamp in embracing relationship with said porous desiccant bag; and  
said porous desiccant bag being secured by said clamp portion.
22. The desiccant cartridge as recited in claim 18 wherein:  
said rigid stand-off member includes an eccentric spacing rib portion and a clamp portion supported by said spacing rib portion between said inner pad portion and said outer pad portion;  
said clamp portion including a first clamping jaw supported by said spacing rib portion and a second clamping jaw supported by said first clamping jaw through a living hinge;  
said first and second clamping jaws defining complementary detents for engagement to secure said clamp in embracing relationship with said porous desiccant bag and an outer annular channel for receiving an annular seal; and  
said porous desiccant bag being secured by said clamp portion.

23. The desiccant cartridge as recited in claim 18 wherein:  
said rigid stand-off member includes a cylindrical cage portion spacing said inner and outer portions; and  
said porous desiccant bag being secured by said cage portion in a position between said inner and outer pad portions.
24. The desiccant cartridge as recited in claim 18 wherein:  
said rigid stand-off member includes a cylindrical cage portion spacing said inner and outer portions;  
said cage portion comprising a first cage element coupled to said inner and outer pad portions and a second cage element supported by said first cage element through a living hinge;  
said first and second cage elements defining complementary detents for engagement to secure said cage portion in embracing relationship with said porous desiccant bag; and  
said porous desiccant bag being secured by said cage portion in a position between said inner and outer pad portions.
25. The desiccant cartridge as recited in claim 18 wherein:  
said rigid stand-off portion includes a flange portion; and  
said inner pad portion, said outer pad portion and said flange portion are of substantially the same size and shape.
26. The desiccant cartridge as recited in claim 18 wherein said porous desiccant bag contains a fluorescent dye wafer.
27. The desiccant cartridge of claim 26, wherein the inner pad further comprises a tab portion to which the desiccant bag is affixed to.
28. The desiccant cartridge as recited in claim 27, further comprising a rigid cap defining a cavity, a plurality of holes communicating between said cavity

and an exterior of said cap, and a spacer portion extending away from said cavity, said second end portion of said porous desiccant bag being received in said cavity.

29. The desiccant cartridge as recited in claim 28, wherein:  
said rigid cap includes a sleeve portion and a web portion closing one end of said sleeve portion to define said cavity;  
said plurality of holes extends through said web portion; and  
said spacer portion extends from said web portion.

30. The desiccant cartridge of claim 29, wherein said rigid cap defines a cavity, a plurality of holes communicating between said cavity and an exterior of said rigid cap, and a spacer portion extends toward said end panel, said second end portion of said porous desiccant bag being received in said cavity.

31. The desiccant cartridge of claim 29, wherein maximum effective hole diameters of the plurality of holes are substantially no greater than a maximum effective grain diameters of a desiccant material so as to retain said grains.

32. In an integrated receiver/condenser having a reservoir and a pair of ports communicating with said reservoir, the improvement comprising:

a desiccant cartridge positioned in said reservoir, said desiccant cartridge including a rigid stand-off member and a porous desiccant bag;

said rigid stand-off member having an inner pad portion, an elongated stand-off portion terminating in said inner pad portion, and an outer pad portion spaced from said inner pad portion; and

said porous desiccant bag being positioned between said inner and outer pad portions, said porous desiccant bag being affixed to at least one of said inner and outer pad portions.

33. The improvement as recited in claim 32 wherein said rigid stand-off member includes an eccentric spacing rib portion spacing said inner and outer pads.

34. The improvement as recited in claim 32 wherein:  
said rigid stand-off member includes an eccentric spacing rib portion and a clamp portion supported by said spacing rib portion between said inner pad portion and said outer pad portion; and  
said porous desiccant bag being secured by said clamp portion in a position between said inner and outer pad portions.
35. The improvement as recited in claim 32 wherein:  
said rigid stand-off member includes an eccentric spacing rib portion and a clamp portion supported by said spacing rib portion between said inner pad portion and said outer pad portion;  
said clamp portion including a first clamping jaw supported by said spacer portion and a second clamping jaw supported by said first clamping jaw through a living hinge;  
said first and second clamping jaws defining complementary detents for engagement to secure said clamp in embracing relationship with said porous desiccant bag; and  
said porous desiccant bag being secured by said clamp portion.
36. The improvement as recited in claim 32 wherein:  
said rigid stand-off member includes an eccentric spacing rib portion and a clamp portion supported by said spacing rib portion between said inner pad portion and said outer pad portion;  
said clamp portion including a first clamping jaw supported by said spacer portion and a second clamping jaw supported by said first clamping jaw through a living hinge;  
said first and second clamping jaws defining complementary detents for engagement to secure said clamp in embracing relationship with said porous desiccant bag and an outer annular channel for receiving an annular seal;  
said clamp portion being positioned between said pair of ports;



an annular seal positioned in said channel and engaged with an inner surface of said reservoir; and

said porous desiccant bag being secured by said clamp portion.

37. The improvement as recited in claim 32 wherein:

said rigid stand-off member includes a cylindrical cage portion spacing said inner and outer portions; and

said porous desiccant bag being secured by said cage portion in a position between said inner and outer pad portions.

38. The improvement as recited in claim 32 wherein:

said rigid stand-off member includes a cylindrical cage portion spacing said inner and outer portions;

said cage portion comprises a first cage element coupled to said inner and outer pad portions and a second cage element supported by said first cage element through a living hinge;

said first and second cage elements define complementary detents for engagement to secure said cage portion in embracing relationship with said porous desiccant bag; and

said porous desiccant bag is secured by said cage portion in a position between said inner and outer pad portions.

39. The improvement as recited in claim 32 wherein:

said at least one of said inner and outer pad portions is composed of plastic; and

said porous desiccant bag is welded to said at least one of said inner and outer pad portions.

40. The improvement as recited in claim 32 wherein:

said rigid stand-off portion includes a flange portion; and

said inner pad portion, said outer pad portion and said flange portion are each of substantially the same size and shape as said reservoir so as to promote positioning, and inhibit lateral movement, of said desiccant cartridge in said reservoir.

41. The improvement as recited in claim 32 wherein said porous desiccant bag contains a fluorescent dye wafer.

42. A method for making a desiccant cartridge for an integrated receiver/condenser comprising the steps of:

a) casting a rigid plastic stand-off member having an inner pad portion, an elongated stand-off portion terminating in said inner pad portion, and an outer pad portion spaced from said inner pad portion; and

b) affixing a porous desiccant bag to at least one of said inner and outer pad portions.

43. The method as recited in claim 42 wherein:

said step b) includes affixing said porous desiccant bag to said at least one of said inner and outer pad portions by means of a method selected from the group consisting of ultrasonic welding, thermal welding and vibration welding.

44. The method as recited in claim 42 wherein:

said step b) includes affixing said porous desiccant bag to said at least one of said inner and outer pad portions by ultrasonic welding.

45. The method as recited in claim 42 wherein:

said step a) includes casting said rigid plastic stand-off member such that said rigid stand-off member includes an eccentric spacing rib portion and a clamp portion supported by said spacing rib portion between said inner pad portion and said outer pad portion; and

said method includes the additional step of:

c) securing said porous desiccant bag with said clamp portion.

46. The method as recited in claim 42 wherein:

said step a) includes casting said rigid plastic stand-off member such that said rigid stand-off member includes an eccentric spacing rib portion and a clamp portion supported by said spacing rib portion between said inner pad portion and said outer pad portion;

said clamp portion including a first clamping jaw supported by said spacer portion and a second clamping jaw supported by said first clamping jaw through a living hinge;

said first and second clamping jaws defining complementary detents for engagement to secure said porous desiccant bag in said clamp; and

said method includes the additional step of:

c) closing said first and second clamping jaws to engage said complementary detents to secure said desiccant container in said clamp portion.

47. The method as recited in claim 42 wherein:

said step a) includes casting said rigid plastic stand-off member such that said rigid stand-off member includes an eccentric spacing rib portion and a clamp portion supported by said spacing rib portion between said inner pad portion and said outer pad portion;

said clamp portion including a first clamping jaw supported by said spacer portion and a second clamping jaw supported by said first clamping jaw through a living hinge;

said first and second clamping jaws defining complementary detents for engagement to secure said clamp in embracing relationship with said porous desiccant bag and an outer annular channel for receiving an annular seal; and

said method includes the additional steps of:

c) closing said first and second clamping jaws to engage said complementary detents to secure said desiccant container in said clamp portion, and

d) positioning an annular seal in said annular channel.

48. The method as recited in claim 42 wherein:

said step a) includes casting said rigid plastic stand-off member such that said rigid plastic stand-off member has a cylindrical cage portion spacing said inner and outer portions; and

said method includes the additional step of:

c) securing said porous desiccant bag with said cage portion.

49. The method as recited in claim 42 wherein:

said step a) includes casting said rigid plastic stand-off member such that said rigid plastic stand-off member has a cylindrical cage portion spacing said inner and outer portions;

said cage portion comprises a first cage element coupled to said inner and outer pad portions and a second cage element supported by said first cage element through a living hinge;

said first and second cage elements define complementary detents for engagement to secure said cage portion in embracing relationship with said porous desiccant bag; and

said method includes the additional step of:

c) closing said first and second cage elements to engage said complementary detents to secure said desiccant container in said cage portion.

50. The method as recited in claim 42 wherein:

said step a) includes casting said rigid plastic stand-off member such that said rigid plastic stand-off member has a cylindrical cage portion spacing said inner and outer portions;

said cage portion comprises a first cage element coupled to said inner and outer pad portions and a second cage element supported by said first cage element through a living hinge;

said first and second cage elements each comprise a plurality of annularly-arrayed spacer bars extending between said inner and outer pad portions, and a plurality of hoops extending transversely of said plurality of annularly-arrayed spacer bars; and

said first and second cage elements define complementary detents for engagement to secure said cage portion in embracing relationship with said porous desiccant bag; and

said method includes the additional step of:

c) closing said first and second cage elements to engage said complementary detents to secure said desiccant container in said cage portion.

51. The method of claim 42, wherein the inner pad further comprises a tab portion to which the porous desiccant bag is affixed to by one of ultrasonic welding, thermal welding and vibration welding.

52. The method as recited in claim 51, further comprising the steps of casting a rigid plastic cap defining a cavity, the cap having a plurality of holes communicating between said cavity and an exterior of said cap, and a spacer portion extending away from said cavity, and affixing a first end portion of the porous desiccant bag to the tab portion and a second end portion of said porous desiccant bag in said cavity.

53. The method of claim 52, further comprising includes casting said rigid plastic cap such that said rigid plastic cap includes a sleeve portion and a web portion closing one end of said sleeve portion to define said cavity, said plurality of holes extends through said web portion, and said spacer portion extends from said web portion; and affixing said sleeve portion to said porous desiccant bag by means selected from the group consisting of ultrasonic welding, thermal welding and vibration welding.

54. The method of claim 53, further comprising inserting said desiccant cartridge through an open end of said receiver into a reservoir of said receiver, placing a fluorescent dye wafer in said porous desiccant bag, and inserting a demountable plug with said open end of said receiver.